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General Sir John Monash

St Kilda St Bridge Engineer

Did you know?

General Sir John Monash (1865–1931) was one of Australia's greatest men, and probably the greatest of its military leaders. The son of Jewish immigrants from Prussia, he graduated from Melbourne University in three faculties – Arts, Law and Engineering.

He was a man of wide-ranging intellect, devoted to literature, music, theatre, languages, and Jewish scholarship.

Engineering Practice - pre World War I

One of Monash's earliest achievements was pioneering the Australian use of reinforced concrete in Australia, then a revolutionary construction material. In 1905 Monash set up the Reinforced Concrete & Monier Pipe Construction Company which continued to develop the use of reinforced concrete in Victoria. It was during this period that the St Kilda Street Bridge was built.

World War I - tactician and inspired leader

Monash achieved fame as a soldier in World War I. His baptism of fire occurred at Gallipoli and his military career on the Western Front was constantly influenced by his lowly status in the eyes of the British – he was a Jew, he was an Australian, he was a "citizen soldier" and he always forcefully spoke his mind. The British didn't approve of any of these characteristics.

He was one of the first generals in World War I to apply the philosophy of "integrated force" – he integrated infantry with tanks, artillery and aircraft in carefully planned, precision-timed assaults, backed with well organised logistics and support services. These tactics bemused the British ranks and caused panic and confusion on the part of the enemy but ultimately resulted in troops breaking through the Hindenburg Line leading to the end of World War I.

Immediate post World War I - leader of repatriation and recovery

At the end of the war he master-minded the return of Australian troops from Europe and the Middle East and did much to find them employment on their return.

The SEC years - big ideas, strong leadership

In 1921 he headed the new State Electricity Commission of Victoria with the task of developing the brown coal resources of the Latrobe Valley. Mining the coal was difficult and due to its high water content it was difficult to burn. Despite this, the Yallourn Power Station was commissioned in 1928 under his leadership and still provides Victoria with the majority of its electricity.

The Shrine of Remembrance - pinnacle of civic duty

During the last decade of his life he spent his energies lavishly on the public affairs of his native Australia and placed his immense prestige at the service of many great causes. Notably, he championed the building of the Shrine of Remembrance in Melbourne and had great influence in its siting and construction. He died in 1931 before the Shrine was completed in 1934.

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1: Major-General Sir John Monash (State Library Collection)

2: Monash and Anderson family photo, 1897. Left to right: John Monash; Joshua Anderson; Bertha Monash (on low seat); Victoria Monash; Anderson's brother; Anderson's two children; Anderson's wife. (State Library Collection)

3: Fyansford Bridge in 1910, built by Sir John Monash. (State Library Collection)

4: Turning an arch at Fyansford Bridge, 1899 (University of Melbourne Archives)

5: General John Monash Headquarters on Saint-Gratien (Somme) castle (Official History of Australia in the war 1914-1918, volume V, Australian Imperial Forces in France)

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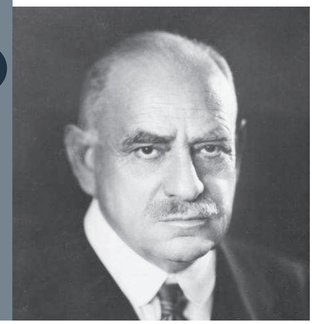

St Kilda Street Bridge constructed 1905

Did you know?

St Kilda Street Bridge was previously named Elwood Canal Bridge, after the 1.2 kilometre canal that runs underneath it.

The bridge was designed by renowned civil engineer John Monash, who later went on to become General Sir John Monash, one of Australia's greatest military leaders.

ENGINEERING HERITAGE
THE INSTITUTION OF ENGINEERS AUSTRALIA
FOUNDED 1919
MARKER

Significance

The heritage-listed St Kilda Street Bridge demonstrates the earliest stage in the development of reinforced concrete girder technology for bridge building. It is the earliest existing example in Victoria of the technological innovation achieved by Monash and his construction company, Reinforced Concrete & Monier Pipe Construction Co. Pty. Ltd.

Innovation

The bridge was built as part of a £30,000 Public Works Department scheme to solve ongoing drainage problems in the low lying swampy land of the Elsternwick and Elwood districts.

The Elwood Canal provided Monash the opportunity to present to Carlos Catani, then Chief Engineer of the Public Works Department, the largely untried reinforced concrete girder technology for bridge building, a cheaper alternative to the existing iron trough girder and concrete bridges.

Monash won a tender for the design and construction of the bridge, subject to the following conditions; a test with a 15 ton steam roller and that only half of the £1,500 quotation fee would be paid before the bridge satisfactorily passed testing.

The tender was submitted in April 1905, with construction commencing in July and completed by September. A successful load test with a steam roller was undertaken on 20 November 1905 in the presence of Catani, the St Kilda city surveyor and municipal representatives from Brighton and Caulfield.

Engineering design

The bridge consists of five-equal spans of 20 feet (6.1 metres) with a 30 degree skew and a total width of 40 feet comprising of 30 feet of road and 10 feet for a footpath on the downstream side.

The superstructure has seven lines of "T" girders spaced 4 feet 8 inches (1.42 metres) apart. There are six columns supporting each span with no transverse beams supporting the deck slab. The columns are supported by individual spread footings in the form of a truncated pyramid. The column heads incorporate small corbels in the direction of the span. The abutments consist of a row of columns, each supporting the end of one girder, backed by precast concrete panels to retain the earth of the embankment.

Influence

The engineering success of St Kilda Street Bridge led to the construction of many other reinforced concrete T-girder bridges throughout Victoria in the early twentieth century.

Between 1905 and 1907, seven bridges were built by the company in the Elwood district, six across the Elwood Canal. By 1915, Monash's firm had built around 70 reinforced concrete bridges in Victoria.

St Kilda Street Bridge is now the oldest known concrete girder bridge to survive in Victoria, is notable for its link to Monash and also for the drainage works that led to the development of the suburb of Elwood.

For more information about this project go to:
engineeringheritage.com.au

Engineering heritage marker placed on 18 April 2015.

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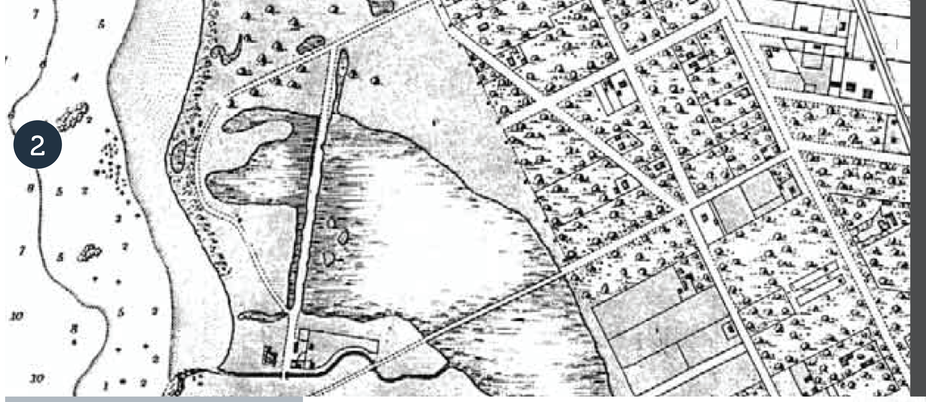

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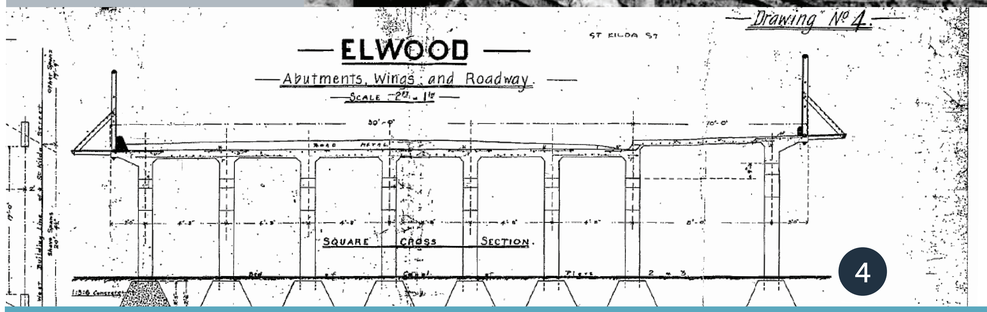

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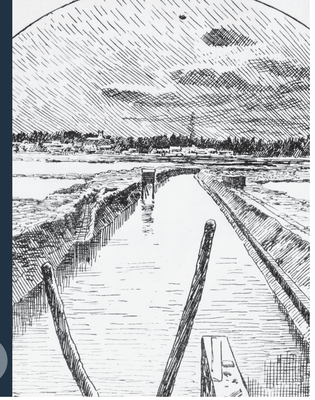
1: General Sir John Monash Bridge Engineer (State Library Collection)

2: Original survey map of Elwood (State Library Collection)

3: Testing the bridge with a steam roller. 1905 (State Library Collection)

4: Initial construction diagram (State Library Collection)



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The story of Elwood Canal

Did you know?

Elwood Canal was previously known as Elster Creek and was named by Charles Hotson Ebden (1811–1867), Treasurer of Victoria. Elster means 'magpie' in his German native tongue, and was inspired by the hundreds of magpies digging for worms in the Elwood swamp.

Charles LaTrobe (1801–1875), Lieutenant-Governor of Victoria, named Elwood after the English religious writer Thomas Ellwood.

Elwood Canal today

Elwood Canal helped shape the transformation of Elwood from a small village on swampy ground to the present day.

The canal measures 1.2 kilometres long, 16.5 metres wide and 3.4 metres deep, stretching from the beach to St Kilda Street, and presents a rare example of public engineering works in the late nineteenth century.

The settlement of Elwood

Elwood was founded on natural swampland at the foot of the Elster Creek Catchment and prior to European settlement was home to the Yalukit-willam clan of the Boon Wurrung tribe.

The steep headland of red sandstone first named Red Bluff and later renamed Point Ormond remains a distinguishing feature on the strip of coastline between St Kilda and Brighton.

Showcasing the contrast of two worlds, Point Ormond and the surrounding South Swamp were particularly important to the clan as a place for socialising and the gathering of food. The swamp provided an abundance of food including plants, tortoises, ducks, eels, frogs, fish and freshwater shellfish.

Separated from nearby St Kilda by a vast swamp, the foreshore around Point Ormond was considered suitably remote as a location for some of the more objectionable facilities and noxious industries, including a quarantine station for typhoid-stricken immigrants, an abattoir, a depot for human waste, coal mine and hunting ground.

The first land sales occurred south of Point Ormond in 1851, but Elwood remained a small village on swampy ground until the mid-1860s when the gold boom era led to an increase in mansions. This in turn fuelled opposition to the noxious industries and led to the transformation and redevelopment of Elwood.

Reclamation and construction of the canal

The swamp was seen as a barrier to Elwood's prosperity and development, and part of the redevelopment scheme to reclaim and redevelop the swamp involved construction of a canal for drainage.

Construction of this grandiose scheme began in May 1880 from the beach to Glenhuntly Road and was completed in 1897, with the remaining section from the canal to St Kilda Street completed in 1905.

The reclamation process began by placing fill in the former swampland.

Engineer George Higgins was awarded a contract for the reclamation of 134 acres of former swampland at a cost of £40,000. Higgins commissioned the construction of an advanced dredge designed by Alexey Von Schmidt, which was aptly named the 'Elwood'.

The dredge was mounted on a barge, pumping sand and clay from the Elwood foreshore, mixed with water, into the low-lying swamp areas. Surplus water was then channelled back to Port Phillip Bay.

Present day Elwood

The completion of the reclamation process kicked off a period of frenetic land sales through to the 1920s and Elwood now thrives as one of Melbourne's most prized beachside locations, with the canal a distinctive feature in its landscape.

Since 1924, Melbourne Water has been responsible for managing the canal.

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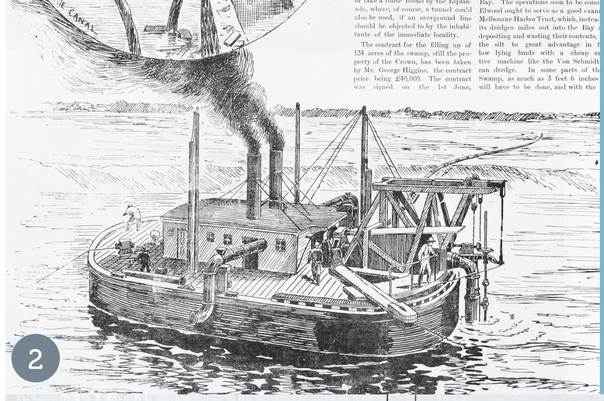

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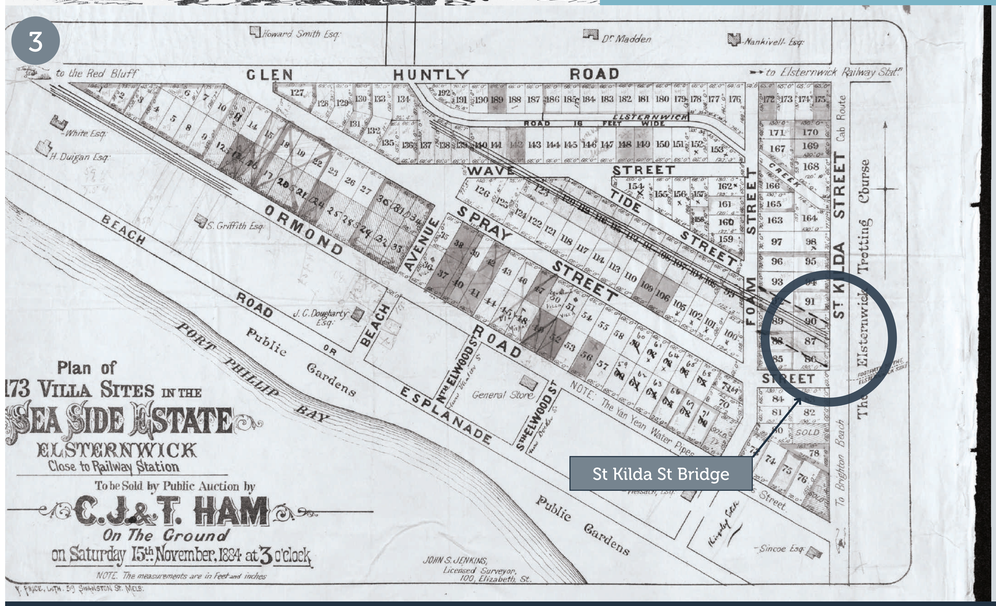

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1: Depiction of the Elwood Canal (State Library Collection)

2: The new dredger "Elwood" at work (State Library Collection)

3: Street Plan showing land available by public auction in 1884 (State Library Collection)